

# X-RAY STORAGE RING PARAMETERS AS OF SEPTEMBER 1, 1998

Normal Operating Energies	2.584 GeV/2.800 GeV
Maximum Operating Current	0.35/0.25 ( $10^{12}$ e-)
Lifetime	~20 hours
Circumference	170.1 meters
Number of Beam Ports on Dipoles	30
Number of Insertion Devices	5
Maximum Length of Insertion Devices	< 4.50 meters
$\lambda_c(E_c)$ at 1.25/1.36 T	2.23 Å (5.6 keV)/1.75 Å (7.1 keV)
$\lambda_c(E_c)$ at 5.0 T (W)	0.56 Å (22.2 keV)/0.48 Å (26.1 keV)
B( $\rho$ )	1.25/1.36 Tesla (6.875 meters)
Electron Orbital Period	567.2 nanoseconds
Damping Times	$\tau_x = \tau_y = 6$ msec; $\tau_e = 3$ msec; $\tau_x = \tau_y = 4$ msec; $\tau_e = 2$ msec
Touschek (0.25A)	$\geq 22$ hrs ( $v_{RF} = 804$ kV)/ 57 hrs. (1120 kV)
Lattice Structure (Chasman-Green)	Separated Function, Quad Triplets
Number of Superperiods	8
Magnet Complement	$\left\{ \begin{array}{l} 16 \text{ Bending (2.7 meters each)} \\ 40 \text{ Quadrupole (0.45 meters each)} \\ 16 \text{ Quadrupole (0.80 meters each)} \end{array} \right.$ (0.20 meters each)
32 Sextupole	9.15, 6.20
Nominal Tunes ( $v_x, v_y$ )	0.0056/0.0062
Momentum Compaction	52.88 MHz
RF Frequency	144/198 kW (0.25A)
Radiated Power for Bending Magnets	804/1120 kW
RF Peak Voltage	400 kW
Design RF Power	0.003
$v_s$ (Synchrotron Tune)	$8.6 \times 10^{-4}/9.2 \times 10^{-4}$
Natural Energy Spread ( $\sigma_e/E$ )	10.5 cm
Natural Bunch Length ( $2\sigma$ )	30
Number of RF Buckets	25
Typical Bunch Mode	$7.2 \times 10^{-8}/7.8 \times 10^{-8}$ meter-radian
Horizontal Damped Emittance ( $\epsilon_x$ )	$7.2 \times 10^{-11}/7.8 \times 10^{-11}$ meter-radian
Vertical Damped Emittance ( $\epsilon_y$ )	23/32
Power per Horizontal Milliradian (0.25A)	

## Arc Source Parameters

Betatron Function ( $\beta_x, \beta_y$ )	1.0 to 3.8 m, 7.9 to 26.5 m
Dispersion Function ( $\eta_x, \eta_y$ )	0.47 to -0.11, -0.39 to 0.22
$\alpha_{x,y} = -\beta'_{x,y}/2$	-0.49 to 1.62, -3.4 to 4.5
$\gamma_{x,y} = (1 + \alpha_{x,y})/\beta_{x,y}$	0.952 to 0.962 m <sup>-1</sup> , 0.81 to 0.52 m <sup>-1</sup>
Source Size ( $\sigma_x, \sigma_y$ )	371 to 612 μm, 27 to 53 μm
Source Divergence ( $\sigma_x, \sigma_y$ )	476 to 324 μrad, 9 to 7 μrad

## Insertion Device Parameters

Betatron Function ( $\beta_x, \beta_y$ )	1.60 m, 0.35 m
Source Divergence ( $\sigma_x, \sigma_y$ )	260 μrad, 35 μrad